



## 916 MHZ ANALOG BANDWIDTH RF SMOKE SENSING SYSTEM WITH INTEGRATED 916 MHZ SMOKE/HEAT SENSING CHRISTMAS ORNAMENT TRANSMITTER

### BACKGROUND OF INVENTION

#### Field of invention

This invention improves previous attempts to monitor potential fire conditions with RF integrated smoke detectors. Residential housing could use this invention for effectively sensing fire hazards during normal non-seasonal holidays and seasonal holidays such as Christmastime. With proper engineering, each smoke sensor or "detector" can be capable of sending and transmitting RF signals to two other detectors in the system. In a residential setting, many families like to install a Christmas tree during the winter holiday season. This system intends to utilize a Christmas tree ornament that sends 916 MHZ RF signals when heat or smoke is detected on or near the tree. By engineering corresponding signals between the ceiling detectors and the ornament, the tree can be integrated into the system at Christmastime. It is the object of this invention to provide a plurality wall/ceiling mount smoke detectors incorporating FCC pre-certified 916 MHZ analog bandwidth RF transceivers implementing into a system a fire/smoke detecting Christmas ornament including a 916 MHZ analog bandwidth transmitter for communicating with the three wall/ceiling mount detectors. Furthermore, the ornament size will be limited to a size of 125 cubic inches or smaller.

#### Description of prior art

This invention allows complete coverage of fire sensing in a structure since each detector can function as a primary sensor then send a signal to the others in a group. Each smoke

detector can then sound its alarm including the one that sensed the smoke. A Christmas RF smoke sensor ornament can be integrated into the system by simply hanging it on the tree during the holiday season. A temperature sensing wireless smoke detector was patented and known as prior art, U.S. Pat. No. 6,084,522 issued July 4, 2000 to Addy, assigned to Pittway Corp. This system does not integrate smoke sensors that can send and receive RF signals. Furthermore it does not integrate a RF Christmas ornament into it's system. U.S. Pat. No. 6,420,973 issued July 16, 2002 to Acevedo does not have the characteristics of this invention by not having the capability to sense smoke in any room and then transmit a signal to others in a group. This patent can only sense smoke where the primary detector is installed. Then it transmits to the other detectors in the group. For instance; one of the drawings in this patent (fig. 1) shows ignition in the kitchen. The receivers in the group sound their alarms. If ignition is in the bedroom the system does not have the capability to sound the others in the group including the kitchen. This patent does not incorporate the ornament as a detector.

#### Summary of invention

With proper design this invention can be a viable way to detect smoke in a room and sound all detectors in a group within a structure. Each detector can function as a primary sensor by detecting the smoke and then transmitting the RF signal to the others in the group. Each detector can receive instruction to sound it's alarm from another in the group. If a fire occurs in a bedroom upstairs, the detectors on the first floor and the basement will sound there alarms also. The number of detectors is limited to only the size of the structure. During Christmas a RF smoke/heat sensing ornament can be attached on

the Christmas tree if desired for added protection of fire occurring near or on the tree.

The RF ornament's frequency signal will match that of the ceiling/wall detectors.

#### Brief description of the drawings

FIG. 1. Shows how a grouping can send signals to the others in a system.

FIG. 2. Shows the Christmas ornament integrated into the system

FIGS. 3,4,5. Are block diagrams showing how a system works during the  
non-holiday season

FIG. 6. Is a block diagram showing how a system works during the holiday  
season

FIG. 7. Shows the schematic of the inner workings of the circuit

#### Detailed description of invention

This smoke sensing system will turn on their alarms 5 through radio frequency transmission and reception. A FCC pre-certified analog bandwidth 916 MHZ RF transceiver-module 3 monitors the air in receive mode. When activated by a smoke sensor circuit 9 through a relay 7 an alarm 5 sounds. The relay 7 switches contacts upon detection of smoke to change the RF module from receive mode to transmit mode. The FCC pre-certified analog bandwidth 916 MHZ transceiver module 3 remains in receive mode until a signal from another smoke detector is received. A thermal sensor 11 is incorporated into the system to detect heat. A planar antenna 23 allows for transmission and reception quality. A test button 19 located through the exterior of each housing

triggers the circuit for operational integrity. A reset button **21** sets each detection unit to standby mode after testing. A housing **18** encloses all internal components. The fire detecting Christmas tree ornament **17** contains a 916 MHZ analog bandwidth transmitter. The ornament is limited to a size of 125 cubic inches or less detects fire or smoke on or near the tree during the winter holiday season.